Volume 323 1997

Contents

The role of references in the astronomical discourse
Girard R., Davoust E. A1

Letters to the Editor

X-ray detections of weak Seyfert 2's with BeppoSAX
Salvati M., Bassani L., Della Ceca R., Maiolino R., Matt G., Zamorani G. L1

Rotational splitting effect in neutron star QPOs
Titarchuk L., Muslimov A. L5

A Reestimate of the Protosolar $(^3H/^1H)_p$ ratio from $(^3He/^4He)_\odot$ solar wind measurements
Gautier D., Morel P. L9

CI fine-structure emission from non-equilibrium PDRs
Störzer H., Stutzki J., Sternberg A. L13

215 GHz VLBI observations of bright Active Galactic Nuclei
Krichbaum T.P., Graham D.A., Greve A., Wink J.E., Alcolea J., Colomer F., de Vicente P., Baudry A., Gómez-Gónzalez J., Grewing M., Witzel A. L17

Identification of a complete sample of northern ROSAT All-Sky Survey X-ray sources. V. Discovery of a $z = 4.28$ QSO near the RASS source RX J1028.6–0844
Zickgraf F.-J., Voges W., Krautter J., Thiering I., Appenzeller I., Mujica R., Serrano A. L21

Widespread water vapour absorption in Sgr B2[1]
Cernicharo J., Lim T., Cox P., González-Alfonso E., Caux E., Swinyard B.M., Martín-Pintado J., Baluteau J.P., Clegg P. L25

Low-energy line emission from Cygnus X-2 observed with the *BeppoSAX* LECS
Kuulkers E., Parmar A.N., Owens A., Oosterbroek T., Lammers U. L29

A *BeppoSAX* observation of the super-soft source CAL 87
Parmar A.N., Kahabka P., Hartmann H.W., Heise J., Martin D.D.E., Bavdaz M., Mineo T. L33

Soft X-ray emission and optical multicolors of faint QSOs in the Selected Area 57
Miyaji T., Connolly A.J., Szalay A.S., Boldt E. L37

RX J0439.8–6809: a double-degenerate supersoft X-ray source?
van Teeseling A., Reinsch K., Hessman F.V., Beuermann K. L41

On the nonthermal emission in active galactic nuclei
Gangadhara R.T., Lesch H. L45

The Hipparcos Catalogue
Perryman M.A.C., Lindegren L., Kovalevsky J., Høg E., Bastian U., Bernacca P.L., Crézé M., Donati F., Grenon M., Grewing M., van Leeuwen F., van der Marel H., Mignard F., Murray C.A., Le Poole R.S., Schrijver H., Turon C., Arenou F., Froeschlé M., Petersen C.S. L49

Double star data in the Hipparcos Catalogue
Lindegren L., Mignard F., Söderhjelm S., Badiali M., Bernstein H.H., Lampens P., Pannunzio R., Arenou F., Bernacca P.L., Falin J.L., Froeschlé M., Kovalevsky J., Martin C., Perryman M.A.C., Wielen R. L53

The Tycho Catalogue
Høg E., Bässgen G., Bastian U., Egret D., Fabricius C., Großmann V., Halbwachs J.L., Makarov V.V., Perryman M.A.C., Schwekendiek P., Wagner K., Wicenec A. L57

The Hipparcos mission: photometric data
van Leeuwen F., Evans D.W., Grenon M., Großmann V., Mignard F., Perryman M.A.C. L61

Cosmology

Massive neutrinos and dark halos around galaxies
Salucci P., Sinibaldi A. 1

Balmer emission-line profile variations in NGC 4593
Kollatschny W., Dietrich M. 5

Cosmic density and velocity fields in Lagrangian perturbation theory
Susperregi M., Buchert Th. 295

Correlated gravitational lensing of the cosmic microwave background
Linder E.V. 305

The distance scale of cosmological γ-ray bursts
Wei D.M., Lu T. 312

Gamma-ray bursts from radio-quiet quasars
Schartel N., Andernach H., Greiner J. 659

Extragalactic astronomy

The CO Tully–Fisher relation for the Virgo cluster
Schöniger F., Sofue Y. 14

The ionization mechanism of the extended gas in high redshift radio galaxies: shocks or AGN photoionization?
Villar-Martín M., Tadhunter C., Clark N. 21

Interpretation of the emission line spectra of Seyfert 2 galaxies by multi-component photoionization models
Komossa S., Schulz H. 31

The final optical identification content of the Einstein deep X-ray field in Pavo
Danziger I.J., Gilmozzi R. 47

Global three-dimensional simulations of magnetic field evolution in a galactic disk. I. Barred galaxies
Otmianowska-Mazur K., von Linden S., Lesch H., Skupniewicz G. 56

Line spectra of Liners. The contribution of the different ionization mechanisms
Contini M. 71

Orientation of the disk galaxies in the Coma cluster
Wu G.X., Hu F.X., Su H.J., Liu Y.Z. 317

Star formation histories in HII galaxies. I. Optical and radio observations
Deeg H.-J., Duric N., Brinks E. 323

The morphological segregation of galaxies in clusters. III. The distant cluster Cl 0939+4713 (Abell 851)
Andreon S., Davoust E., Heim T. 337

The distribution of ionized gas in early-type galaxies. III. *M/L* determinations based on triaxial models
Pizzella A., Amico P., Bertola F., Buson L.M., Danziger I.J., Dejonghe H., Sadler E.M., Saglia R.P., de Zeeuw P.T., Zeilinger W.W. 349

Search for 183 GHz water maser emission in starburst galaxies
Combes F., Nguyen-Q-Rieu, Dinh-V-Trung 357

Bar strength and star formation activity in late-type barred galaxies
Martinet L., Friedli D. 363

N body simulations of the nucleus of M 31
Emsellem E., Combes F. 674

Galaxy evolution at low redshift? II. Number counts and optical identifications of faint IRAS sources
Bertin E., Dennefeld M., Moshir M. 685

Dust extinction of HII in NGC 598 and NGC 5457
Petersen L., Gammelgaard P. 697

The nature of the FHIL winds from AGN
Erkens U., Appenzeller I., Wagner S. 707

Rest-frame variability of quasars and Seyfert galaxies in the ultraviolet: constraints on the discrete-event models
Paltani S., Courvoisier T.J.-L. 717

Molecular gas in the elliptical galaxy NGC 759. Interferometric CO observations
Wiklind T., Combes F., Henkel C., Wyrowski F. 727

Radio-loud active galaxies in the northern ROSAT All-Sky Survey. II. Multi-frequency properties of unidentified sources
Brinkmann W., Siebert J., Feigelson E.D., Kollgaard R.I., Laurent-Muehleisen S.A., Reich W., Fürst E., Reich P., Voges W., Trümper J., McMahon R. 739

Kinematics and stellar populations in active galaxies: the LINER NGC 4579 (M 58)
Palacios J., García-Vargas M.L., Díaz A., Terlevich R., Terlevich E. 749

Galactic structure and dynamics

Interarm features in gaseous models of spiral galaxies
Patsis P.A., Grosbøl P., Hiotelis N. 762

Is the Sun located near the corotation circle?
Mishurov Yu.N., Zenina I.A., Dambis A.K., Mel'nik A.M., Rastorguev A.S. 775

Stellar kinematics in the solar neighbourhood and the disc scale lengths of the Galaxy
Bienaymé O., Séchaud N. 781

Stellar clusters and associations

Lithium abundances in the young open cluster IC 2602
Randich S., Aharpour N., Pallavicini R., Prosser C.F., Stauffer J.R. 86

CCD photometry of the metal-rich halo cluster NGC 6366
Alonso A., Salaris M., Martínez-Roger C., Straniero O., Arribas S. 374

Formation, structure and evolution of stars

The generation order parameters and the γ-ray spectra of pulsars
Wei D.M., Song L.M., Lu T. 98

Brown dwarfs in the Pleiades cluster. II. *J*, *H* and *K* photometry
Zapatero Osorio M.R., Martín E.L., Rebolo R. 105

The symbiotic star YY Herculis. I. Photometric history over 1890–1996
Munari U., Rejkuba M., Hazen M., Mattei J., Schweitzer E., Luthardt R., Shugarov S., Yudin B.F., Popova A.A., Chugainov P.V., Sostero G., Lepardo A. 113

X-ray emission from Ap–Bp stars: a magnetically confined wind-shock model for IQ Aur
Babel J., Montmerle T. 121

Pleiades low-mass binaries: do companions affect the evolution of protoplanetary disks?
Bouvier J., Rigaut F., Nadeau D. 139

On the cycle periods of stellar dynamos
Ossendrijver A.J.H. 151

A candidate optical and infrared counterpart for GRS 1739–278
Martí J., Mirabel I.F., Duc P.-A., Rodríguez L.F. 158

Bondi flows on compact objects revisited
Chakrabarti S.K., Sahu S.A. 382

The mass-loss history of the symbiotic nova RR Telescopi
Nussbaumer H., Dumm Th. 387

(RN) The iron abundance in helium star HD 144941
Jeffery C.S., Harrison P.M. 393

Depolarization and position angle jumps due to relative longitude shift of pulsar beams
Xu R.X., Qiao G.J., Han J.L. 395

Ginga observations of Cygnus X-2
Wijnands R.A.D., van der Klis M., Kuulkers E., Asai K., Hasinger G. 399

Internal temperatures and cooling of neutron stars with accreted envelopes
Potekhin A.Y., Chabrier G., Yakovlev D.G. 415

A spectroscopic search for high azimuthal-order pulsation in broad-lined late F- and early G-stars
Baade D., Kjeldsen H. 429

(RN) The nature of the unusual source IRAS 18530+0817
Walker H.J., Tsikoudi V., Clayton C.A., Geballe T., Wooden D.H., Butner H.M. 442

Is UU Herculis a post-AGB star?
Klochkova V.G., Panchuk V.E., Chentsov E.L. 789

Asymmetric *Hα* disk emission dominates the HST/FOS spectrum of Circinus X-1
Mignani R., Caraveo P.A., Bignami G.F. 797

Testing the stability and reliability of starspot modelling
Kóvári Zs., Bartus J. 801

The [Fe/H] distribution of a volume limited sample of solar-type stars and its implications for galactic chemical evolution
Favata F., Micela G., Sciortino S. 809

Rotation velocities of white dwarf stars
Heber U., Napiwotzki R., Reid I.N. 819

Hipparcos parallaxes and the nature of δ Scuti stars
Høg E., Petersen J.O. 827

Diffusion in differentially rotating stars
Bernasconi P.A. 831

Photometry and proper motion of the Vela pulsar
Nasuti F.P., Mignani R., Caraveo P.A., Bignami G.F. 839

High azimuthal number pulsation modes in fast rotating δ Scuti stars: the case of HD 101158 ≡ V 837 Centauri
Mantegazza L. 844

New massive X-ray binary candidates from the ROSAT Galactic Plane Survey. I. Results from a cross-correlation with OB star catalogues
Motch C., Haberl F., Dennerl K., Pakull M., Janot-Pacheco E. 853

Particle injection in the Circinus X-1 radio outbursts
García-Sánchez J., Paredes J.M. 876

(RN) The variations of the Bp star HD 137509
Mathys G., Lanz T. 881

Stellar atmospheres

PAHs in circumstellar envelopes. I. Processes affecting PAH formation and growth
Allain T., Sedlmayr E., Leach S. 163

A spectral analysis of the hydrogen-deficient star HD 144941
Harrison P.M., Jeffery C.S. 177

Subtle structures in the wind of P Cygni
Vakili F., Mourard D., Bonneau D., Morand F., Stee Ph. 183

Ionization structure of the shells surrounding Herbig Ae/Be stars
Kholtygin A.F., Il'in V.B., Voshchinnikov N.V. 189

SiO rotation-vibration bands in cool giants. I. A grid of model spectra for different stellar parameters
Aringer B., Jørgensen U.G., Langhoff S.R. 202

Erratum: Line-blanketed model atmospheres for R Coronae Borealis stars and hydrogen-deficient carbon stars
Asplund M., Gustafsson B., Kiselman D., Eriksson K. 286

A double dust shell surrounding the carbon star U Antliae
Izumiura H., Waters L.B.F.M., de Jong T., Loup C., Bontekoe Tj.R., Kester D.J.M. 449

Carbon, nitrogen, oxygen and lithium abundances of six cool supergiants in the SMC
Hill V., Barbuy B., Spite M. 461

Circumstellar C_2, CN, and CH^+ in the optical spectra of post-AGB stars
Bakker E.J., van Dishoeck E.F., Waters L.B.F.M., Schoenmaker T. 469

Atmospheric NLTE-models for the spectroscopic analysis of luminous blue stars with winds
Santolaya-Rey A.E., Puls J., Herrero A. 488

Giants with infrared excess
Plets H., Waelkens C., Oudmaijer R.D., Waters L.B.F.M. 513

(RN) On the NLTE plane-parallel and spherically symmetric model atmospheres of helium rich central stars of planetary nebulae
Kubát J. 524

The influence of clumping on the infrared and radio continuum of early-type stars
Blomme R., Runacres M.C. 886

Metal abundances of A-type stars in three galactic clusters
Hui-Bon-Hoa A., Burkhart C., Alecian G. 901

The surface gravities of cool dwarf stars revisited
Fuhrmann K., Pfeiffer M., Frank C., Reetz J., Gehren T. 909

Magnetic reconnection in a magnetosphere-accretion-disk system. Axisymmetric stationary states and two-dimensional reconnection simulations
Rastätter L., Neukirch Th. 923

Diffuse matter in space (including H II regions and planetary nebulae)

Dispersion measure variations observed in the direction of the millisecond pulsar PSR B1821–24
Cognard I., Lestrade J.-F. 211

NGC 7027: discovery of a Raman line in a planetary nebula
Péquignot D., Baluteau J.-P., Morisset C., Boisson C. 217

Numerical hydrodynamic simulations of jet-driven bipolar outflows
Smith M.D., Suttner G., Yorke H.W. 223

(RN) Intense molecular emission from the Lagoon nebula, M 8
White G.J., Tothill N.F.H., Matthews H.E., McCutcheon W.H., Huldtgren M., McCaughrean M.J. 529

The ionisation state of PAHs in interstellar environments
Dartois E., d'Hendecourt L. 534

High resolution imaging and spectroscopy of the Serpens reflection nebula (SRN). Evidence of a latitude-dependent wind
Gómez de Castro A.I. 541

Time-dependent accretion and ejection implied by pre-stellar density profiles
Henriksen R., André P., Bontemps S. 549

A unified model of interstellar dust
Li A., Greenberg J.M. 566

The X-ray shadow in the south-east of the Large Magellanic Cloud
Blondiau M.J., Kerp J., Mebold U., Klein U. 585

An observational study of cometary globules near the Rosette nebula
White G.J., Lefloch B., Fridlund C.V.M., Aspin C.A., Dahmen G., Minchin N.R., Huldtgren M. 931

Structure and kinematics of a protostar: mm-interferometry of L 1157
Gueth F., Guilloteau S., Dutrey A., Bachiller R. 943

Physical models of photon-dominated regions: influence of clumpiness and geometry for S 140
Spaans M., van Dishoeck E.F. 953

(RN) New faint planetary nebulae in Centaurus/Musca
Weinberger R., Kerber F., Gröbner H. 963

Comment on "Photodestruction of PAHs in the interstellar medium I. Photodissociation rates for the loss of an acetylenic group"
Boissel P. 966

Remarks on a comment on Photodestruction of PAHs in the interstellar medium. I
Allain T., Leach S. 968

The Sun

Helioseismic measure of solar activity-meaning and applications
Dziembowski W.A., Goode P.R., Schou J., Tomczyk S. 231

Solar P-mode frequencies from the IRIS network
Gelly B., Fierry-Fraillon D., Fossat E., Palle P., Cacciani A., Ehgamberdiev S., Grec G., Hoeksema J.T., Khalikov S., Lazrek M., Loudagh S., Pantel A., Regulo C., Schmider F.X. 235

The Ar/Ca relative abundance in solar coronal plasma
Young P.R., Mason H.E., Keenan F.P., Widing K.G. 243

The dispersion of radio waves in the solar corona
Benz A.O., Pianezzi P. 250

Three-dimensional numerical study of converging flux events
Dreher J., Birk G.T., Neukirch T. 593

Two-dimensional speckle spectroscopy of the moustache phenomenon on the Sun
Denker C. 599

Prominence oscillations and stability. Communicating the distant photospheric boundary
Schutgens N.A.J. 969

The solar system

A study of Hilda asteroids. II. Compositional implications from optical spectroscopy
Dahlgren M., Lagerkvist C.-I., Fitzsimmons A., Williams I.P., Gordon M. 606

Dynamics of comets in the outer planetary region. II. Enhanced planetary masses and orbital evolutionary paths
Valsecchi G.B., Manara A. 986

Celestial mechanics and astrometry

The Hipparcos Catalogue as a realisation of the extragalactic reference system
Kovalevsky J., Lindegren L., Perryman M.A.C., Hemenway P.D., Johnston K.J., Kislyuk V.S., Lestrade J.F., Morrison L.V., Platais I., Röser S., Schilbach E., Tucholke H.-J., de Vegt C., Vondrák J., Arias F., Gontier A.M., Arenou F., Brosche P., Florkowski D.R., Garrington S.T., Preston R.A., Ron C., Rybka S.P., Scholz R.-D., Zacharias N. 620

Physical and chemical processes

An eigenfunction method for the comptonisation problem. Angular distribution and spectral index of radiation from a disk
Gieseler U.D.J., Kirk J.G. 259

Acceleration mechanism in compact objects
Marcowith A., Pelletier G., Henri G. 271

Boundary conditions and critical surfaces in astrophysical MHD winds
Bogovalov S.V. 634

Reactions of the methylidine radical with CH_4, C_2H_2, C_2H_4, C_2H_6, and but-1-ene studied between 23 and 295 K with a CRESU apparatus
Canosa A., Sims I.R., Travers D., Smith I.W.M., Rowe B.R. 644

Time-dependent self-similar solution of the vertical structure of a thin accretion disk
Fröhlich H.-E. 652

Differentially rotating relativistic magnetic jets. Asymptotic transfield force-balance including differential rotation
Fendt C. 999

Preview of accepted papers (May 1997) 287

Abstracts of articles which have been published in A&A Supplement Series 123, No. 1 290

Four colour photometry of late-type binary systems. I. First *uvbyβ* light curves of ZZ Ursae Majoris
Clement R., García M., Reglero V., Clausen J.V., Bravo A., Suso J., Fabregat J., Torrejón J.M., Reig P., Marco A. 290

An Atlas of the infrared spectral region. II. The late-type stars (G–M)
Carquillat J.M., Jaschek C., Jaschek M., Ginestet N. 290

Optical positions and proper motions of radio stars
Lu P.Z., Xu T.Q. 290

Photoelectric *uvby* – β photometry of the open cluster NGC 2422
Rojo Arellano E., Peña J.H., González D. 290

Cold neutral gas associated with the Gum nebula
Reynoso E.M., Dubner G.M. 290

WSRT HI synthesis absorption study towards Cassiopeia A
Schwarz U.J., Goss W.M., Kalberla P.M.W. 291

Four colour photometry of late-type binary systems. II. New light curves of BH Virginis
Clement R., Garcia M., Reglero V., Clausen J.V., Bravo A., Suso J., Fabregat J. 291

A multiwavelength study of star formation in the very young open cluster NGC 6530
van den Ancker M.E., Thé P.S., Feinstein A., Vázquez R.A., de Winter D., Pérez M.R. 291

An analysis of the currently available calibrations in Strömgren photometry by using open clusters
Jordi C., Masana E., Figueras F., Torra J. 291

A consolidated catalogue of λ Bootis stars
Paunzen E., Weiss W.W., Heiter U., North P. 292

Identification of a complete sample of northern ROSAT All-Sky Survey X-ray sources. II. The optical observations
Zickgraf F.-J., Thiering I., Krautter J., Appenzeller I., Kneer R., Voges W.H., Ziegler B., Chavarria C., Serrano A., Mujica R., Pakull M., Heidt J. 292

Field #3 of the Palomar–Groningen Survey. I. Variable stars in the outer edge of the Sagittarius dwarf galaxy
Ng Y.K., Schultheis M. 292

Spectral classifications in the near infrared of stars with composite spectra. II. Study of a sample of 180 stars
Ginestet N., Carquillat J.M., Jaschek C., Jaschek M. 292

Orthogonal operator calculation of E1, M1 and E2 transition probabilities in Ti III and V IV
Raassen A.J.J., Uylings P.H.M. 292

Atomic data from the IRON Project. XXII. Radiative rates for forbidden transitions within the ground configuration of ions in the carbon and oxygen isoelectronic sequences
Galavís M.E., Mendoza C., Zeippen C.J. 293

An attempt to detect polarization effects in the envelope of γ Cassiopeiae with the GI2T interferometer
Rousselet-Perraut K., Vakili F., Mourard D., Morand F., Bonneau D., Stee Ph. 293

Optical materials for near infrared Wollaston prisms
Oliva E., Gennari S., Vanzi L., Caruso A., Ciofini M. 293

CLEAN and WIPE
Lannes A., Anterrieu E., Maréchal P. 293

Abstracts of articles which have been published in A&A Supplement Series 123, No. 2 656

The unusual supernova remnant G76.9+1.0: The low-frequency radio spectrum
Landecker T.L., Zheng Y., Zhang X., Higgs L.A. 656

A new radial velocity curve for the RS Canum Venaticorum star σ Geminorum. Constraints on its physical parameters
Duemmler R., Ilyin I.V., Tuominen I. 656

The B3-VLA quasar sample
Vigotti M., Vettolani G., Merighi R., Lahulla J.F., Pedani M. 656

Nucleosynthesis of light elements inside thermally pulsing AGB stars. I. The case of intermediate-mass stars
Forestini M., Charbonnel C. 656

Illumination in binaries
Hameury J.-M., Ritter H. 657

Spectrographic and imaging observations of solar type U radio bursts
Aurass H., Klein K.-L. 657

New theoretical yields of intermediate mass stars
van den Hoek L.B., Groenewegen M.A.T. 657

New "weak-line" – T Tauri stars in Lupus
Krautter J., Wichmann R., Schmitt J.H.M.M., Alcalá J.M., Neuhäuser R., Terranegra L. 658

The mean magnetic field modulus of Ap stars
Mathys G., Hubrig S., Landstreet J.D., Lanz T., Manfroid J. 658

Discussion of the results from solar astrolabes
Penna J.L., Benevides-Soares J.L., Andrei A.H., Laclare F. 658